## REMARKS

This Amendment, filed in reply to the Office Action dated August 28, 2006, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-18 are all the claims pending in the application. Claims 1-8 and 17-18 are rejected under 35 U.S.C. § 112, second paragraph. Claims 1, 17 and 18 are rejected under 35 U.S.C. § 102(b). Applicant hereby amends claims 1, 3, 5-7 and 17-18. No new matter is added.

As an initial matter, the Examiner objects to the specification because of the word "cDANs" in paragraph 4. Applicant hereby amends "cDANs" to "cDNAs" in paragraph 4 of the specification.

Turning to the merits of the Office Action, claims 1-8 and 17-18 are rejected under 35 U.S.C. § 112, second paragraph.

With regard to the rejection of claims 1-8, 17 and 18 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the phrase "average 0" is vague and indefinite. Applicant amends claims 1, 17 and 18 to recite average $\mu_0$ to overcome the rejection. The rejection of claims 2-8 is overcome because of their dependency from claim 1.

With regard to the rejection of claims 1, 6 and 17-18 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the claim is indefinite because the use of variable "u" is vague. Applicant amends the independent claims 1 and 17-18 to recite that u represents data points corresponding to sum of gene expression level from two channels to overcome the rejection. The rejection of claim 6 is overcome because of its dependency from claim 1.

With further regard to the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the use of variable "$\mu_0, \sigma_1^2$" is vague. Recitation of "$\mu_0, \sigma_1^2$" is removed from the amended claim 1.

With regard to the rejection of claim 3 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the use of variable "ν" (Greek letter Nu) is vague. Applicant amends claim 3 to recite that v represents data points corresponding to difference of the gene expression levels of the two channels.

With regard to the rejection of claim 5 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the use of variable "$g_{01}$" is vague because the variable represents a simultaneous distribution in the specification, whereas it represents the mixing ratio in the claim. To overcome the rejection, claim 5 is amended to recite "$\rho_{01}$", instead of "$g_{01}$."

With further regard to the rejection of claims 5 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the equations 31, 32, 43 and 44 are vague because said equations are matrices. Applicant respectfully submits that matrices are commonly used mathematical expressions. Moreover, equations involving matrices are also commonly used. A skilled artisian would know the metes and bounds of the claimed invention in light of the specification and what is commonly known in the art.

With regard to the rejection of claims 5 and 6 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the use of variable "v" is vague. To overcome the rejection, independent claim 5 is amended to recite that v represents data points corresponding to difference of the gene expression level of the two channels. The rejection of claim 6 is overcome because of its dependency from claim 5.

With regard to the rejection of claims 6 and 7 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the recitation of "true gene expression" is vague. The phrase of "true gene expression" represents $\tau_1$, $\tau_2$ of equations ($X = \tau_1\alpha + \beta + \varepsilon_1$, $Y = \tau_2\alpha + \beta + \varepsilon_2$) which represent gene expression level data, taking either 1 or 0, which represents the presence or absence of true gene expression in each cell.

With regard to the rejection of claim 5 under 35 U.S.C. § 112, second paragraph, the Examiner contends that the variables ($u_i$, $v_i$) have insufficient antecedent basis. Claim 5 is amended to overcome the rejection.

Turning to the prior art rejection, claims 1, 17 and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by The EMMIX Software for the Fitting of Mixtures of Normal and t-Components (hereinafter "EMMIX Software by McLachlan") and the User's Guide to EMMIX by McLachlan et al. (hereinafter "User's Guide by McLachlan") as evidenced by Fundamentals of Probability and Statistics for Engineers by Soong (hereinafter "Soong").

Applicant submits that EMMIX Software by McLachlan does not teach or suggest each feature of claim 1. For example, claim 1 recites distributed parameter estimating means for estimating distributed parameters of a mixed normal distribution shown in the following equation (25) using the gene expression level data from said input device, and sending the estimated distributed parameters:

$$(1 - \xi)\,\varphi\,(u - \mu_0 \mid \sigma_0^2) + \xi\varphi\,(u - \mu_1 \mid \sigma_1^2) \quad (25)$$

where $\phi(u - \mu_0 \mid \sigma_0^2)$ represents the density function of a one-dimensional normal distribution with average $\mu_0$ and variance $\sigma_0^2$, $\phi(u - \mu_1 \mid \sigma_1^2)$ represents the density function of

a one-dimensional normal distribution with average $\mu_1$ and variance $\sigma_1^2$, $(\mu_0,\sigma_0^2)$ and $(\mu_1,\sigma_1^2)$ are average and variance parameters of first and second components, respectively, u represents data points corresponding to sum of gene expression levels from two channels and $\xi$ is the mixing ratio, with the assumption that $\mu_0 < \mu_1,\ \sigma_0^2 > 0,\ \sigma_1^2 > 0,\ 0 < \xi < 1$ is satisfied.

The Examiner incorrectly contends that equation 1 of EMMIX Software by McLachlan is equivalent to the above recited feature.

In EMMIX Software by McLachlan, it is required that each data point is assumed to be the summation of mixing ratio times the multivariate normal probability density function with mean and covariance matrix of each component. See EMMIX Software by McLachlan, page 2. EMMIX Software by McLachlan fails to disclose or suggest estimating distributed parameters which represent the summation of the mixing ratio times the density function of a one-dimensional normal distribution with an average and variance of each components.

User's Guide by McLachlan and Soong, which are relied upon as additional explanation of EMMIX Software by McLachlan, do not provide any disclosure supplemental to EMMIX Software by McLachlan with regard to the above recited feature of claim 1.

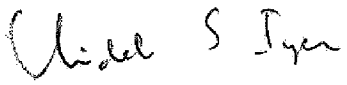
For at least the above reasons, claim 1 is patentable. Claims 17 and 18 are patentable at least for reasons analogous to these provided above for claim 1 because clams 17 and 18 recite features analogous to those discussed above in relation to claim 1.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Chid S. Iyer
Registration No. 43,355

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: December 26, 2006